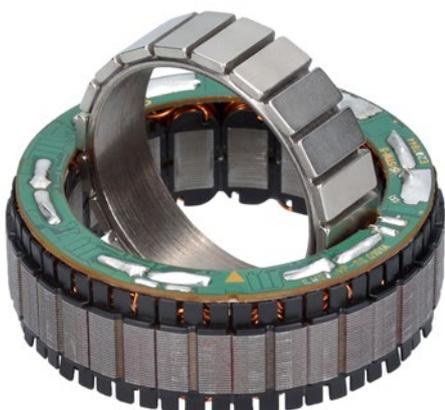# Each moment.
Perfect control.
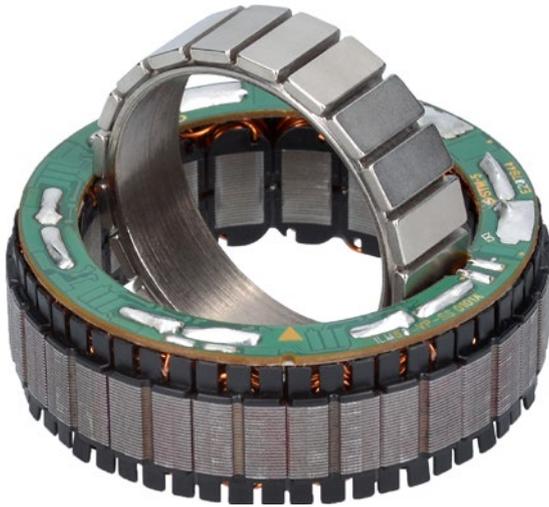
**ILM-E Series
Frameless servo kits**

ILM-E Series

Frameless servo kits

HIGHLIGHTS

▶ Frameless construction for high design flexibility

▶ Excellent torque density at an attractive price-performance ratio

▶ Low thermal losses thanks to high copper fill-factor

▶ Lightweight and compact

▶ Smallest and lightest solution compared to competitors

▶ Spacious hollow shafts for additional functions in the same installation space

▶ Excellent dynamic control and precision

▶ Flexibly adaptable to customer requirements

▶ 100 % Made in Germany

Cost-efficient drive solutions for the most demanding applications.

The new TQ-ILM-E series offers market-leading torque density with low weight for the most challenging applications. Whether in automation, medical technology, mechanical engineering, aviation and robotics, they enable designers to overcome technological boundaries. The series is a cost-effective alternative to our premium ILM series and offers the essential TQ-RoboDrive performance at an excellent price/performance ratio. Particularly noteworthy is that the ILM-E series has the same torque per kilogram as the premium ILM series. In addition, TQ-RoboDrive offers customized frameless motors based on the ILM-E, which can be adapted to the individual customer requirements via the number of windings and the lengths. This means that the performance of the motors can be adapted to your personal needs.

BASIC DATA

	ILM-E50×08	ILM-E50×14	ILM-E70×10	ILM-E70×18	ILM-E85×13	ILM-E85×23	ILM-E85×26	ILM-E85×30
Power [W]	203	210	231	258	409	429	443	446
Rated voltage U_r* [V]	48	48	48	48	48	48	48	48
Rated torque T_r* [Nm]	0.3	0.53	0.62	1.22	1.39	2.56	2.87	3.3
Peak torque T_{max} at 20% deviation from linearity [Nm]	0.98	1.71	2.01	3.94	4.47	8.23	9.24	10.64
Max rotation speed n_{max}** at U_r [rpm]	12,916***	7,580	7,120	4,040	5,620	3,210	2,930	2,570
Diameter D [mm]	50	50	69	69	85	85	85	85
Length L [mm]	17.25	23.2	22.7	30.7	27.4	37.4	40.4	44.4
Weight m [g]	76	135	162.2	292	356	629.8	712	822
Number of pole pairs	10	10	10	10	10	10	10	10
Rotor inertia J [kgcm²]	0.056	0.0928	0.232	0.327	0.621	1.08	1.286	1.48

*   At nominal current. Thermal behavior is strongly dependent on installation situation. Nominal operational temperature of the stator: -40°C to 125°C.

** Theoretical no-load rotation speeds at U_r. Variations can arise from operation with different inverters.

*** Max rotation speed due to mechanical structure

STAR-SERIAL

	ILM-E50×08	ILM-E50×14	ILM-E70×10	ILM-E70×18	ILM-E85×13	ILM-E85×23	ILM-E85×26	ILM-E85×30
Rated current I_r^* [A]	5	5.1	5.6	6.3	9.9	10.4	10.7	10.8
Copper losses $P_{L,r}$ at T_r and 20°C [W]	11.3	16.5	11.7	21.1	16.9	26.2	30.1	33.9
Torque constant k_T^* at 20°C [mNm/A]	60	104	111	194	140	246	268	306
Motor constant kM at 20°C [Nm/√W]	0.089	0.13	0.181	0.27	0.338	0.5	0.524	0.567
Terminal resistance R_{TT}^* at 20°C [mΩ]	602	846	498	710	230	323	350	387
Terminal inductance L^{TT}* [μH]	484	824	896	1,468	568	953	1,124	1,187
No load speed [rpm]	6,458	3,790	3,556	2,020	2,810	1,600	1,475	1,290

DELTA SERIAL

	ILM-E50×08	ILM-E50×14	ILM-E70×10	ILM-E70×18	ILM-E85×13	ILM-E85×23	ILM-E85×26	ILM-E85×30
Rated current I_r^* [A]	8.7	8.8	9.7	10.9	17.1	18.0	18.5	18.7
Copper losses $P_{L,r}$ at T_r and 20°C [W]	11.3	16.5	11.7	21.1	16.9	26.2	30.1	33.9
Torque constant k_T^* at 20°C [mNm/A]	34.6	60	64	112	81	142	155	176
Motor constant kM at 20°C [Nm/√W]	0.089	0.13	0.181	0.27	0.338	0.5	0.524	0.567
Terminal resistance R_{TT}^* at 20°C [mΩ]	201	282	166	237	77	108	117	129
Terminal inductance L_{TT}^* [μH]	161	275	299	489	189	318	375	396
No load speed [rpm]	11,186	6,564	6,170	3,500	4,860	2,780	2,540	2,230

STAR PARALLEL

|	ILM-E50×08	ILM-E50×14	ILM-E70×10	ILM-E70×18	ILM-E85×13	ILM-E85×23	ILM-E85×26	ILM-E85×30
Rated current I_r^* [A]	10	10.2	11.2	12.6	19.8	20.8	21.4	21.6
Copper losses $P_{L,r}$ at T_r and 20°C [W]	11.3	16.5	11.7	21.1	16.9	26.2	30.1	33.9
Torque constant k_T^* at 20°C [mNm/A]	30	52	55	97	70	123	134	153
Motor constant kM at 20°C [Nm/√W]	0.089	0.13	0.181	0.27	0.338	0.5	0.524	0.567
Terminal resistance R_{TT}^* at 20°C [mΩ]	151	212	125	178	58	81	88	97
Terminal inductance L_{TT}^* [μH]	121	206	224	367	142	238	281	297
No load speed [rpm]	12,916***	7,580	7,120	4,040	5,620	3,210	2,930	2,570

* At nominal current. Thermal behavior is strongly dependent on installation situation. Nominal operational temperature of the stator: -40°C to 125°C.
** Theoretical no-load rotation speeds at U_r. Variations can arise from operation with different inverters.
*** Max rotation speed due to mechanical structure

MOUNTING DIMENSIONS

	ILM-E50×08	ILM-E50×14	ILM-E70×10	ILM-E70×18	ILM-E85×13	ILM-E85×23	ILM-E85×26	ILM-E85×30
Stator diameter D js8 [mm]	50	50	69	69	85	85	85	85
PCB diameter G [mm]	48.2	48.2	67.4	67.4	83.4	83.4	83.4	83.4
Winding head diameter g [mm]	48	48	67.2	67.2	82.8	82.8	82.8	82.8
Stator length L [mm]	17.25	23.2	22.7	30.7	27.4	37.4	40.4	44.4
Hollow-shaft diameter rotor d H8 [mm]	30	30	42	42	52	52	52	52
Rotor length l [mm]	10.2	16.2	12.2	20.8	15.8	25.2	27.2	31.2
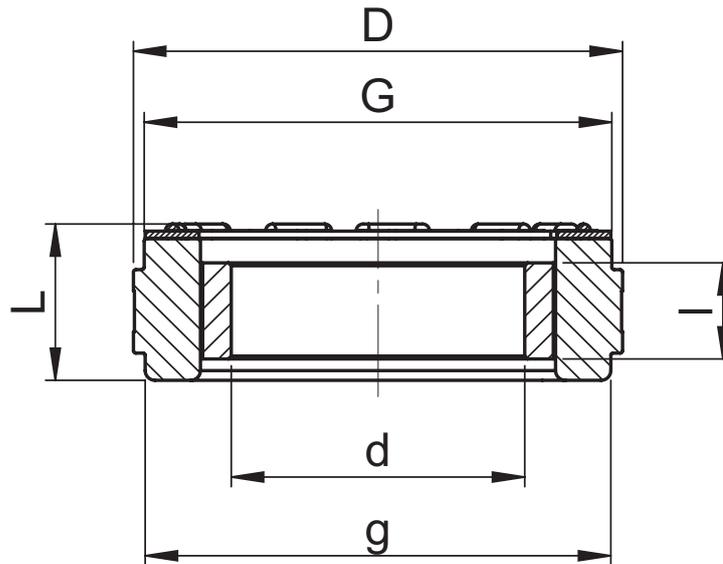
TQ-Systems GmbH
Mühlstraße 2 | Gut Delling | 82229 Seefeld | Germany
Tel.: +49 8153 9308–0 | info@tq-group.com | tq-group.com

tq-robodrive.com